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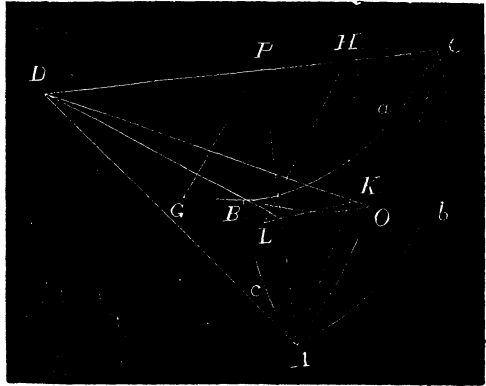
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DEMONSTRATION OF A PROPOSITION (SEE QUERY, P. 55).

BY R. J. ADCOCK, MONMOUTH, ILL.

Let  $ABC$  represent the triangle. Draw  $AP$  perpendicular to  $CD$ , the radius of the sphere. In the plane  $DBC$ , perpendicular to  $CD$ , draw  $PG$  = sine of  $BC$ .

Then twice the area of  $APG$ , the orthographic projection of the plane triangle  $ABC$  upon the plane through  $A$  perpendicular to  $CD$ , =  $\sin a \sin b \sin C$  and likewise the projections of the plane triangle  $ABC$  upon planes through  $B$  and  $C$ , perpendicular to  $DB$  and  $DA$  are  $\sin a \sin c \sin B$ ,  $\sin b \sin c \sin A$ , which projections are equal, being upon planes equally inclined to the plane  $ABC$ .



Also,  $\sin AO \sin BO \sin AOB$  is twice the projection of the plane triangle  $AOB$  upon a plane perpendicular to  $OD$ , the inclination of which plane to  $APG$  is the arc  $OC$ . Hence the projection of  $\sin AO \sin BO \sin AOB$  upon  $APG$  is  $\sin AO \sin BO \sin AOB \cos OC$ .

Through  $A$ , draw  $AK$ , the sine of  $AO$ ,  $KH$  perpendicular to  $CD$ , and  $HL$  parallel and equal to  $PG$ ; then the triangle  $LKH$  is the projection of the plane triangle  $OBC$  upon a plane perpendicular to  $CD$ , and  $LH \times HK \times \sin C = \sin a \cos AO \sin CO \sin C = \sin BO \sin CO \sin BOC \cos AO$ .

In like manner the projection of the plane triangle  $AOC$  upon a plane perpendicular to  $CD$  is equal to  $\sin AO \sin CO \sin AOC \cos BO$ . Hence  $\sin a \sin b \sin C = \sin a \sin c \sin B = \sin b \sin c \sin A = \sin AO \sin BO \times \sin AOB \cos CO + \sin BO \sin CO \sin BOC \cos AO + \sin AO \sin CO \sin AOC \cos BO = \sin AO \sin BO \sin CO (\cot AO \sin BOC + \cot BO \sin AOC + \cot CO \sin AOB)$ .

NOTE ON THE SOLUTION OF PROBLEM 260, BY THE EDITOR —In the solution of this problem (pp. 121–22), the equations from Routh were incorrectly written, and should be corrected as follows: In (1), for —, read +, and in (2), for “sin”, read cos; also, in (3), for “cos” read sin.

By introducing these corrections in the solution at p. 121 we get